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The Hormonal Control of Estrous in Bitches

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Abstract: The researchers analyzed the possibility to stop the estrous in bitches through the hormonal treatment. For this reason, during 2007-2009 sixteen bitches of different ages and breeds being in anestrous period were selected from clinics of Tirana district excluding bitches with health problems. For every case, the appearance of estrous cycle is determined through anamnesis, clinical examination and vaginal cytology. As a hormonal treatment for stopping cycling Proligestone (Covinan®, Intervet) was used. The bitches were treated with injection in doses 20 mg kg^{-1} or 0.1 mL kg^{-1} weigh SC. The statistical analysis of the data shows that the estrus appears 190±14 days after the last treatment. Collateral effects were found after the last application of the hormonal treatment. The systemic application of the hormonal sub-stances for the prevention of the estrus results to be efficient, however other risk factors should be additionally considered.

Key words: Estrous, bitch, anestrous, proligestone, vaginal cytology, Albania

INTRODUCTION

The bitches are classified as seasonal monoesters species. In particular periods of the year, they exhibit 1-2 estruses. This frequency is typically influenced by specific factors like the breed, geographical position and management condition which are the most important ones (Christiansen, 1984).

Typically in Albania, bitches exhibit two oestrus seasons in spring (March up to May) and in the entry of the autumn (September up to October). Some dog owners avoid the demonstration of their dog's oestrus. Therefore, they try to limit dog's reproduction activity. Also due to other effects, it is sometimes necessary to limit dog's reproduction activity.

The bitch's reproduction activity can be limit through surgical intervention (ovaryhysteroectomy) which consists in the definitive interruption of reproductive activity. Additionally, the reproductive activity can be limit in conservative (medical) way (Sokolowski *et al*., 2001).

Another method consists in using of different natural or synthetic hormonal substances (mainly steroids) in order to inhibit to delay or cancel the oestrus without damaging the reproductive activity for the future. In bitches, the oestrus cycle is quite long compared with the others animals lasting about 6 months. Any phase of the cycle has different hormonal profile.

The progesterone is the main hormone of the cycle. It starts to increase from yellow body in the end of pro-estrum (from luteinised follicles) during the oestrus and metoestrum. During the anoestrus phase, the level of progesterone is under basal level (<0.1 ng mL^{-1}) (Morrow, 1986). The external injection of progesterone during this phase can cause anti-gonadotrops effect. The inhibition of production of FSH and LH hormones causes the interruption of follicles development and therefore, the interruption of the estrus.

The treatment of bitches during pro-estrus or at the beginning of the estrus delay temporary the estrus exhibition. While its application during anoestrus inhibit the estrus for a long time depending of the substance and the purpose of its use. The clinical signs and the histological changes of genital tract are necessary for determination of the optimal moment of the progesterone use.

Every phase has clear clinical signs. However, laboratory test of vaginal cytology is very helpful for their determination, especially during anoestrus phase. The laboratory technique consist of detections of histological changes in vaginal tract during the cycle phases under influence of different hormones concentrations that circle in blood principally of 17-β Estradiol (Morrow, 1986; Fayrer-Hosken, 1996; Feldman and Nelson, 2004). Histological changes can be examined in vaginal mucus and according of its cells type, there can determine the exist cycle phase of the bitches.

MATERIALS AND METHODS

This study was realised in some private clinics of Tirana district during the time period 2007-2009.

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Table 1: The evaluation of cycle phases through vaginal cytology in bitches (Christiansen, 1984)

	The cycle phase					
Cell types	Anestrus	The beginning of pro-estrus	The end of proestrusit	The beginning estrusit	The end of oestrus	Diestrusi
The parabazale cells	+					++
Small intermedial cells	+	+				++
Big intermedial cells		+++	+			
The anuclear superficial cells			++	++	+++	
The nuclear superficial cells			++	++	+++	
Eritrocytes		+++	++	+		
Leukocytes	+	+	+		+	++
The bacteria	+	++	+++			
The spermatozoon					+	+

Animals: Sixteen bitches clinically healthy mixed-bred bitches, aged 2-6 years, weighing between 10 and 35 kg were selected for this study. The determination of cycle phase was performed through anamnesis, clinical control, vaginal examination and vaginal cytology.

Vaginal cytology: Researchers took samples from vagina. The samples of cytological examination were taken through a sterile cotton swab in the deepness of vagina. After their spread on the lama, fixation, dryness and dyeing was preformed their microscopic examination for evaluation of the vaginal cells. Their examination consisted on evaluation of vaginal cells.

Hormonal treatment: The bitches were treated with Proligestone (Covinan®, Intervet) in doses 2 mg kg^{-1} or 0.1 mL kg^{-1} weigh. The oestrus inhibitory effects were evaluated through the calculation of times, days from treatment time until next cycle.

RESULTS AND DISCUSSION

Cytology examination of the smear is one of the important in connection with the gynaecological investigation of the bitch. Analysis of the epithelial cell content of the vaginal secretion is used to demonstrate the stage of the cycle and the optimum time for hormonal treatment or mating and artificial insemination. All bitches were found to be in anestrous phase since microscopic analysis showed the presence of a few basal-cells, parabasal and intermediate cells and a few leukocytes. Treatment of the bitches in this phase of the cycle helps for delaying the next phase. Findings on vaginal cytology were compared with that of Christiansen (1984) (Table 1). The aim of this study is the quantification of the effect of the treatment with Proligestone (Covinan®, Intervet) for the purpose of limiting dog's reproduction activity. The time of treatment is calculated with reference to the 1st day of treatment until the 1st day of proestrum.

Table 2: The records of hormonal treatment of experimental bitches

	The inhibition of oestrus (days)				
No. of bitches	170-180	181-190	191-200	201-210	Average
16	4	3	6	3	190±14

The results of the study are shown in Table 2. The extreme limits of the oestrus change from 175-206 days. The Proligeston effects for the inhibition of the oestrus in the experiment bitches are compatible with the literature data (Schaefers-Okkens, 1996). The mechanism of action of the hormonal substance used by us progesterone is explained with its ability to inhibit the hypotalamo-hypophisis axis. This effect inhibits the ovary activity and the manifestation of the oestrus. The experimental treated animals did not exhibit side effects from the treatment. Nevertheless, the hormonal treatment should not be repeated more than twice one after the other.

CONCLUSION

The bitches should be examined for different pathologies as breast tumours or infections of genital tract. The cytology of vaginal mucus is an efficient method for determination of the cycle phases in bitches. The regular hormonal treatment (progesterone) during anoestrus inhibits the oestrus about 190±14 day^{-1}. The inhibition period of the oestrus has the tendency to be longer in young bitches even the statistical analyses do not confirm this tendency. It is not advisable that the bitches should be treated twice with progesterone preparations for the oestrus control. The frequent treatment can cause increase of the weight, hair drop and other major side effects.

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